ATOMIC ENERGY Newsletter

THE FIRST AND ONLY

ROBERT M. SHERMAN, EDITOR, PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS, INC., 509 FIFTH AVENUE, NEW YORK 17, N. Y.

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Dear Sir:

United States Government-owned patents in the atomic energy and related fields, and which have been made available on a royalty-free, non-exclusive licensing basis, have now been abstracted and listed in the Feb. 28th, 1950, "Register of Patents Available for Licensing or Sale". Copies of the Register may be obtained without charge from Commissioner of Patents, Washington 25, D. C.

Appeals under the "dispute clause" of AEC contracts (which permit a contractor to appeal a decision of an AEC contracting officer) will now be handled by an Advisory Board on Contract Appeals. Recently set up, it will be composed of Shelden Elliott, Dean of the University of California Law School; Herbert F. Taggart, assistant Dean of the University of Michigan School of Business Administration; and Clark C. Vogel, Newark, N.J., attorney.

Seventy-two Geiger-Muller tubes will be bought on a competitive bid basis by the U.S.A.F., Materiel Command, Wright-Patterson AF Base, Dayton, Ohio, under inv. no. 038-1116. Inquiries for bid forms should be marked, "attention MCPPXS2". (Bid closing date not yet announced.

At the Institute of Atomic Energy in Education, meeting in New York last week under the auspices of New York University's School of Education, some 250 educators were urged to develop atomic energy programs in local and regional school systems. At four panel sessions, discussions centered about changes in curricula necessary because of the importance of atomic energy.

A Corps of Engineers unit will build facilities at Eniwetok Atoll for the forthcoming evaluation tests there of new atomic weapons. Part of the construction force is to leave the U.S. soon; Brig. Gen. F. B. Butler will be in command. It will reinforce the firm of Holmes & Narver who are now engaged there in construction of semi-permanent housing, utilities, and communications. Meanwhile, Joint Task Force-3, consisting of Army, Navy, Air Force and AEC people is preparing for the experimental work.

Recent discussions at Harwell, England, by U. S., Britain, and Canada, covering the atomic energy "Declassification Guides" (joint codes of secrecy), have been concluded. Decisions made there will affect what new atomic energy information will be released, or withheld. Recommendations of the scientific representatives are being transmitted to the Atomic Energy Commissions of the three nations involved.

Dr. Albert Einstein declared about the hydrogen bomb in a recent telecast that "radioactive poisoning of the atmosphere and hence annihilation of any life on earth has been brought within range of technical possibility". He advocated "a supra-national judicial and executive body be set up, empowered to decide questions of immediate concern to the security of the nations".

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AT THE ATOMIC CITIES AND CENTERS IN THE UNITED STATES...

ARCO, Idaho- Under a contract negotiated by the AEC with the Fluor Corporation, Ltd., Los Angeles, covering the Materials Testing Reactor, that firm will construct the reactor itself, the reactor building, and auxiliary facilities directly connected with operation of the reactor. Fluor's contract covers more than 50% of the construction cost of the MTR, variously estimated to total $20 to $25 million. The balance of the work on this nuclear reactor, which will be the second to get under way here at this Reactor Testing Station (the first, the Experimental Breeder Reactor, is now under construction by Bechtel Corp.) will be let by competitive bidding. Contracts will be let for such work as a laboratory wing, steam plant, and reactor service building, as well as for nine other smaller construction projects. In order to finish the MTR as quickly as possible, work on the structure will start before specifications are completed. Revisions of design and specifications will be made as the construction progresses, to take advantage of the latest research results in the nuclear field. For these reasons, the AEC has stated, the negotiated form of contract was used for the job, rather than letting it on a competitive bid basis. More than 80 U. S. firms were considered by the AEC before the decision was made to award the work to Fluor.

LOS ALAMOS, New Mexico- Estimated to cost between $10 and $12 million, a new two-story and basement laboratory building will be erected on a mesa south of Los Alamos proper. It will be the largest single construction move undertaken here since the AEC took over Los Alamos from the Manhattan Project in 1947. The job, issued as bid invitation no. 291-50-59, will be awarded as a whole to one general contractor. It will include not only the structure, utilities, and appurtenances, but such equipment as laboratory furniture and special laboratory equipment. Plans and specifications will be issued in increments; bids will be opened about June 20th, 1950. Requests for plans and specifications, which must be submitted not later than March 15th, should be made to the AEC's Contract Division here at Los Alamos.

Intensifying the air defense of Los Alamos, pilots planning flights within 150 nautical (172 statute) miles of Los Alamos, at altitudes greater than 10,000 feet above mean sea level, must now notify the Civil Aeronautics Administration. If such flight plans are not filed, the CAA has warned, USAF fighter aircraft may be dispatched to make identification. (Flights at any altitude over the Los Alamos prohibited area, which extends about 10 statute miles around the city, have been banned under an Executive Order of Jan. 17th, 1948.)

OAK RIDGE, Tennessee- Reflecting the quickened pace of the U.S. nuclear reactor development program, advanced training courses in that field will now start at the National Laboratory here March 6, six months before the originally scheduled opening date of September, 1950. Formal training will be given in this first course to 19 industrial and government scientists and engineers in nuclear reactor development. Blaw-Knox Construction Co.; Electric Boat Co.; Gibbs & Cox, Inc.; Allis-Chalmers Mfg. Co.; and Cutler-Hammer, Inc., are the industrial concerns with people attending. In addition, Navy, Air Force, and NEPA Project (Nuclear Energy for Propulsion of Aircraft) representatives are taking the course. The Reactor Training School, which will operate continuously, is under the direction of Dr. F. C. Von der Lage.

The new, permanent, $2 million radioisotope processing area is now completed and in operation here. The re-grouping of facilities, which has put the processing of radioisotopes on an "assembly line" basis, has made for greater output and lower costs to consumers on several radioisotopes. (See page 3, this LETTER.) Although the isotope program takes only 15% of the budget at the National Laboratory here, in terms of radiation, 1949's radioisotope output has been placed at the equivalent of 500-grams of radium.

The first cyclotron in the Southeast, an 86-inch accelerator which will produce protons of energy about 20 MeV, will be ready for use here about May 1st, in research programs of the Oak Ridge National Laboratory. Now being assembled in the electromagnetic plant area here, advantage is being taken of an existing building and some of the equipment originally installed for the separation of uranium-235 by the electromagnetic process.

PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

Probing Geiger counters, needed by the surgeon for localization of brain tumors with the aid of radioactive phosphorous, have been constructed by C. V. Robinson, of the Biophysical Laboratory, Harvard Medical School, Boston. They have been used at Massachusetts General Hospital. A pair of 3 mm. probing counters, which have operated satisfactorily for several months, Robinson reports, have probing tubes 0.121-in. O.D., with 0.004-in. walls, of stainless steel, 3-in. long. The sensitive volume coincides with a 12-mm. length of 0.001-in. tungsten wire near the tip of the counter. The filling is 25-mm. of ethyl acetate, and 2 atmospheres of argon. The thresholds are 1050 volts, and the backgrounds 4 or 5 counts per minute, unshielded. Robinson also has furnished Massachusetts General with a pair of 2-mm. probing counters of similar construction.

Fission-product radioisotopes will be available after March 1st at reduced prices, and in greater quantities, according to the AEC's Isotopes Division, at Oak Ridge. Some examples: Radioactive iodine, reduced from $1.00 to $0.75 per millicurie; radiostrontium and radiobarium, from $1.35 to $1.00 (with further reduction to $0.50 per millicurie for 100 millicuries or more); radioactive promethium and neodymium, from $100.00 and $75.00 per millicurie, to $75.00 and $50.00 respectively (and for quantities exceeding 10 millicuries, costs are $20.00 and $12.00, respectively, per millicurie.

FROM THE MANUFACTURERS- Special high voltage multi-circuit (6 contact) connectors, designed for use with preamplifiers operating at the moderately high voltages utilized for nuclear research. Small and light in weight, with insert body of the high-dielectric, Melamine. Contacts are precision machined and silver plated. Six models available as complete assemblies.--Atomic Instrument Co., 160 Charles St., Boston, Mass.

Model SC-13, radioactive mineral analyzer. Consists of a 1 3/16 in. thick annular lead shield inside of which is a cylindrical hollow space 2-in. in diameter. In the center of this space, a TGC-5 Geiger tube is plugged into a regular 4-prong socket. For assaying, the pulverized radioactive mineral sample is loaded into the annular space between the tube and the shield. When proper procedures are followed, the manufacturer states, samples may be assayed with results in good agreement with chemical assays.--Tracerlab, Inc., 130 High St., Boston 10, Mass.

Recording electrometer. Specifically designed to measure and record very small currents, such as those developed in an ionization chamber. The record is made by a Brown strip chart potentiometer recorder. Manufacturer states direct currents as low as a billionth of a microampere can be consistently recorded on a linear chart.--Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Phila.

ATOMIC PATENT DIGEST...latest U.S. and British applications & grants...

Radiation counter, for indicating the intensity of beta rays. Comprises a cathode in the form of a thin walled envelope of material of low absorption for beta rays, and an anode and ionizable medium contained in this envelope. U.S. Pat. No. 2,494,641, issued Jan. 17th, 1950, to H. L. Anderson and P. G. Koontz, and assigned to United States of America (USAEC).

Method and apparatus for detecting radiation dosage. Comprises a container of material capable of transmitting radiation, with a radiation mask disposed against one interior wall of this container. A film overlies this mask, and has one portion extending beyond it. A filter, superposed on a portion of the film, defines areas of different resistance to radiation. A second mask, covering another portion of the film, is pierced with circular holes of different diameters; the axes of the holes are parallel. The diameter of each hole is relatively small with respect to the thickness of the second mask, so that radiation reaching the second mask is cut off at relatively small angles of incidence. U. S. Pat. No. 2,496,218, issued Jan. 31st, 1950, to Jean Kieffer.

Betatron injector structure. Comprises an accelerator apparatus for emitting charged particles, and a U-shaped shield member with its leg portions extending beyond this emitting means and extending generally radially of the closed path of these particles. U. S. Pat. No. 2,497,891, issued Feb. 21st, 1950 to D. W. Kerst, and assigned to the Board of Trustees of the Univ. of Ill.

AT ATOMIC ENERGY CENTERS ABROAD: GREAT BRITAIN...

At the Atomic Energy Research Establishment, Harwell, the use in the larger British pile (BEPO) of an improved uranium cartridge has now been announced. Consisting of a cylindrical uranium rod encased in aluminum, the unit, produced at the Springfields establishment, is better able to resist higher temperatures than earlier designs. With greater reactor heat, additional utility is foreseen for this pile.

The isotope program is proceeding satisfactorily, the AERE has noted, with 338 samples produced in November, 1949, the last month for which figures are available. Medical users took 173, with 30 to universities, 13 to industry, 65 to the Establishment itself, and 57 sent by air to overseas users. Material equivalent in gamma radiation to 400 grams of radium was furnished by Harwell for the tests carried out last Spring on the Naval vessel Arethusa, where it was used in conjunction with studies of radiation hazards; the material has since been returned.

Chemical research at Harwell includes the development of methods for extracting radioisotopes of high specific activity and very high purity from pile-irradiated materials, and an extensive range of unusual analytical problems. Research groups are also working in the fields of physical chemistry, with particular reference to ion exchange and the properties of concentrated solutions of electrolytes; in radio-chemistry, on problems related to the fission products; and in radiation chemistry and inorganic chemistry.

The Harwell cyclotron, the largest so far operating in Europe, and the only one of its kind in Britain (until a new and larger one has been built in Liverpool), has been operating since Dec., 1949, and is producing protons of energy about 180 MeV; it is of the frequency modulated type. Work which will be done with this accelerator will include neutron experiments, production of mesons, and investigations in connection with cloud chambers.

Final work by architects and engineers is being done on the Ministry of Supply's plans for the £5 million atomic plant at Capenhurst, near Chester, 4 miles from Ellesmere Port. While construction may start late in June, the project will possibly require 3-years to complete. Capenhurst will be the sixth atomic energy establishment in Great Britain.

PEOPLE...in the atomic energy industry...

David E. Lilienthal, first Chairman of the U. S. Atomic Energy Commission, left that office Feb. 15th. He had delayed his departure from the Commission, originally set at Jan. 1st., at the request of President Truman. Sumner T. Pike, only remaining original member of the AEC as set up in 1946, was designated by President Truman as acting head.

Dr. George B. Pegram, vice-president of Columbia University, has been named a scientific and educational consultant to the Oak Ridge Institute of Nuclear Studies, at Oak Ridge, Tenn.

Dr. H. W. Koch has been appointed to the Radiation Physics Section of the National Bureau of Standards, where he will be in charge of the research program utilizing the new 50 MeV betatron, and the 180 MeV synchrotron which will soon be available. Dr. Koch comes to the Bureau from the University of Illinois, where he directed several graduate research programs, and helped in the design and construction of an 80 MeV and 300 MeV betatron.

BOOKS & OTHER PUBLICATIONS... in the nuclear field...

Atomic Energy and the Physical Sciences. The USAEC's account of its stewardship of nuclear energy activity in the United States during 1949.--Superintendent of Documents, Washington 25, D.C (50¢)

Radioisotopes: A Survey. A general survey of work being done with radioisotopes today.--Kellex Corporation, 233 Broadway, New York 7.

Artificial Radioactivity, by P. B. Moon. Dicusses certain radioactive decay processes, and briefly sketches methods of measuring radioactivity. For research workers and students in the nuclear field. 102 pages.--Cambridge Univ. Press, American Br., 51 Madison Ave., New York 10. ($2.50)

IONIZING RADIATION...investigations & notes..

Following X-ray irradiation studies of cellulose acetate (AEN 2/14/50, p.5), N. N. Winogradoff has subjected samples of polystyrene, polythene, and paraffin wax to irradiation from a 50 kVp., 30 ma. copper-target X-ray tube, for periods up to 60-hours. No evidence was found of brittleness in the irradiated patches, nor were any definite changes observed (after X-ray diffraction studies) in any of the structures. The prolonged exposure to X-rays did however produce characteristics which caused strong absorption of ultra-violet radiation in the polystyrene. Winogradoff believes this effect may have useful applications. Work was done in the research laboratories of Lansil, Ltd., Lancaster, England.

Neutron bombardment to produce permanent color changes and alter other properties of gems, especially diamonds, has been proposed by N. E. Nahmias, in a British patent shortly to be issued (specifications 15986/49). In the case of diamonds, it is suggested that hardness also may be increased, thus making the lower quality gems suitable for industrial purposes. Numerous other advantages are claimed for this process.

Radioactive iodine has been successfully used at Strong Memorial Hospital, Rochester, in treating a lingual thyroid, surgical procedures for which are difficult because of its anatomic location, and problems of anaesthesia, asphyxia, and hemorrhage. In this case, the first known to be so treated, J. A. Schilling, M.D., J.W. Karr, M.D., and J.B. Hursh, estimate that the total irradiation administered to the lingual thyroid of their patient was 11,000 rep (roentgen equivalent physical). The patient, a 30-year old mother, was given an oral therapeutic dose (4 days after an initial test dose) of 10-millicuries of iodine-131 in 200 cc. of water. From an original size of about 4-cm. in diameter, indirect laryngoscopy, 2½ years after treatment started, revealed a 1½-cm. nodule at the base of the tongue. (During this period the patient had been on 0.032-gm. of thyroid extract three times a day.) The patient continued with the thyroid extract, and was in otherwise excellent health. It is the opinion of those concerned with this case that the use of radioactive iodine should prove to be a valuable form of therapy in lingual thyroid.

The first photograph of the track of a beta particle ejected by a single body cell has been made at the Atomic Energy Project of the University of Rochester School of Medicine. The work is significant in that single body cells, which have absorbed radioactive isotopes, may now be accurately located. Formerly, medical researchers were unable to localize radioactive material to a single cell in tissue section. G. A. Boyd, and Hilde Levi, who performed the experiments, used nuclear track photographic plates prepared by the emulsion research department at Kodak Research Laboratories. They placed the tissue section, from rats to which radioactive carbon had been administered, directly on these plates.

RADIOISOTOPES...latest tracer applications...

An effort to determine industrial interest in radioactive tracer techniques is being made by the British firm of Mactaggart & Evans, Ltd. A questionnaire they are sending to some 10,000 manufacturing firms in Britain, Norway, Denmark, Sweden, and Holland asks the firms whether radioactive tracer techniques could help their individual research or production, and if they contemplate establishing their own radiochemical laboratories. The survey is also intended to gauge present requirements for special compounds containing tracer elements.

Radioactive iron has been used at the University of Rochester School of Medicine and Dentistry in studies of age as it affects osmotic and mechanical fragility of dog erythrocytes. W.B. and J.M. Stewart, M.J. Izzo, and L.E. Young, in this work, administered radioactive iron intravenously to dogs. They found that the mechanical fragility of the newly formed cells containing radioactive iron is less than that of the general cell population, whereas toward the end of their life span it is greater.

Sincerely,

The Staff,
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